X-Treme Engineering Sdn Bhd v Initial-T Engineering Consultancy Sdn Bhd

HIGH COURT (SHAH ALAM) — SUIT NO 22C-09–05 OF 2014
SEE MEE CHUN J
30 SEPTEMBER 2015

Tort — Negligence — Claim — Engineers appointed to prepare alternative design plan — Allegation that there was defect in endorsement plan — Piling load — Whether percentage of piling load, additional mezzanine floor and increase of floor load amounted to negligence

The plaintiff was a contractor appointed by Paragon Promenade S/B ('Paragon') to design and build piling, pile cap and stump for a project. Pursuant to a contract, the plaintiff appointed the defendant to prepare an alternative design plan. The defendant was a firm of civil, structural and bridge consulting engineers. This was a claim for negligence. The plaintiff claimed that the June endorsement plan was defective. The plaintiff relied on *res ipsa loquitur*. The defendant denied the claim and stated there was no defect and the difference in piling load in October endorsement plan was due to a change from non-suspended lower ground floor to suspended and additional mezzanine floor and changes by way of higher load at facilities floors. The defendant stated that the plaintiff commenced piling work without obtaining approval from EDP on June endorsement plan. There were objections from Paragon from June–August 2013 but there is no record. The defence was that the increase in load factor was due to change in basement ground floor from non-suspended to suspended; additional mezzanine floor and increase of floor load at the facilities floor. In addition the defendant submitted that it had initially prepared on the basis of suspended which was subsequently revised to non-suspended and then back to suspended. The counterclaim by the defendant was for RM63,000 being the professional fees due and owing to the defendant for services rendered. The primary issue was whether the percentage of piling load attributed to the changes from non-suspended to suspended, additional mezzanine floor and increase of floor load at the facilities floor amounted to negligence on the part of the defendant.

Held, dismissing the plaintiff's claim; allowing the defendant's counterclaim with costs:

(1) The evidence of the defendant that they had prepared the initial basement floor as suspended and then to non-suspended was probable. PW1 had confirmed receipt and that the column load was higher. PW1 also agreed the piling load was much higher when compared with June

endorsement plan but disagreed he insisted the loading be reduced as he wanted the design to be non-suspended. It was DW3 evidence the column loading was lower and it was reduced because the plaintiff wanted it to be non-suspended and for a one tonne per square feet load to be implemented. DW1's evidence was consistent in that the defendant had initially designed a suspended floor which was then changed to non-suspended on plaintiff's instructions and this was the premise for June endorsement plan (see para 19).

(2) Evidence has been led and accepted that the defendant was not negligent in preparing June endorsement plan. On a balance of probability plaintiff has not proved June endorsement plan was defective thereby necessitating October endorsement plan (see paras 36–37).

[Bahasa Malaysia summary

Plaintif adalah kontrator yang dilantik oleh Paragon Promenade S/B ('Paragon') untuk mereka dan membina cerucuk, tutup cerucuk dan pancang bagi projek. Berikutan kontrak, plaintif melantik defendan untuk menyediakan pelan rekaan alternatif. Defendan adalah firma jurutera pakar runding awam, struktur dan jambatan. Ini adalah tuntutan untuk kecuaian. Plaintif menuntut bahawa pelan endorsmen Jun adalah cacat. Plaintif bergantung ke atas *res ipsa loquitur*. Defendan menafikan tuntutan tersebut dan menyatakan tidak terdapat kecacatan dan perbezaan dalam beban cerucuk dalam pelan endorsmen Oktober adalah akibat pertukaran daripada tingkat bawah tak tergantung kepada tergantung dan tingkat mezanin tambahan dan pertukaran melalui beban yang lebih di tingkat kemudahan. Defendan menyatakan bahawa plaintif memulakan kerja cerucuk tanpa memperolehi kelulusan daripada EDP atas pelan endorsmen Jun. Terdapat bantahan daripada Paragon dari Jun–Ogos 2013 tetapi tidak terdapat rekod. Pembelaan adalah bahawa tambahan dalam faktor beban adalah akibat pertukaran di lantai bawah tanah daripada tak tergantung kepada tergantung; tingkat mezanin tambahan dan penambahan beban lantai di tingkat kemudahan. Selanjutnya, defendan berhujah bahawa ia pada mulanya menyediakan atas asas tergantung yang kemudiannya ditukar kepada tak tergantung dan balik kepada tergantung. Tuntutan balas oleh defendan adalah untuk sebanyak RM63,000 sebagai fi profesional yang kena dibayar kepada defendan bagi perkhidmatan yang diberikan. Isu utama adalah sama ada peratusan beban cerucuk berpunca daripada pertukaran tak tergantung kepada tergantung, tingkat mezanin tambahan dan penambahan beban lantai di tingkat kemudahan merupakan kecuaian oleh pihak defendan.

Diputuskan, menolak tuntutan plaintif; membenarkan tuntutan balas defendan dengan kos:

(1) Keterangan defendan yang mereka telah menyediakan tingkat bawah tanah yang mula sebagai tergantung dan kemudiannya tak tergantung

adalah mungkin. PW1 telah mengesahkan menerima dan bahawa beban tiang adalah lebih tinggi. PW1 juga bersetuju beban cerucuk adalah lebih tinggi apabila dibandingkan dengan pelan endorsmen Jun tetapi tidak bersetuju yang dia mendesak beban tersebut dikurangkan kerana dia menghendaki rekaan menjadi tak tergantung. Adalah keterangan DW3 bahawa beban tiang adalah lebih rendah dan ia dikurangkan kerana plaintif menghendakinya tak tergantung dan bagi satu tan beban kaki persegi dilaksanakaan. Keterangan DW1 adalah konsisten di mana defendan telah pada mulanya mereka lantai tergantung yang kemudiannya ditukar kepada tak tergantung atas arahan plaintif dan ini adalah asas bagi pelan endorsmen Jun (lihat perenggan 19).

(2) Keterangan telah dikemukakan dan diterima bahawa defendan tidak cuai dalam menyediakan pelan endoremen Jun. Atas imbangan kebarangkalian plaintif tidak membuktikan pelan endorsmen Jun adalah cacat dengan itu memerlukan pelan endormen Oktober (lihat perenggan 36–37).]

Notes

For cases on negligence in general, see 12(1) & (2) *Mallal's Digest* (5th Ed, 2015) paras 1046–2139.

Cases referred to

Batu Kemas Industri Sdn Bhd v Kerajaan Malaysia Tenaga Nasional Bhd [2015] 5 MLJ 52, CA (refd)

Matang Plastik & Metal Work Industries Sdn Bhd & Ors v Daimler Chrysler (M) Sdn Bhd & Ors [2014] 6 MLJ 244, CA (refd)

PB Malaysia Sdn Bhd v Samudra (M) Sdn Bhd [2009] 7 MLJ 681, HC (refd)

Scot v London and St Katherine Docks [1865] 3 H&C 596 (refd)

Singapore Finance Ltd v Lim Kah Ngam (S' Pore) Pte Ltd & Eugene HL Chan Associates (Third Party) [1984] 2 MLJ 202 (refd)

M Muthuraman (Muthu & Partners) for the plaintiff.
Sarasvathi Kulaveerasingam (Dorairaj, Low & Teh) for the defendant.

See Mee Chun J:

INTRODUCTION AND PARTIES

[1] The plaintiff is a contractor appointed by Paragon Promenade S/B ('Paragon') to design and build piling, pilecap and stump for a project. The defendant is a firm of civil, structural and bridge consulting engineers. EDP Consulting Group S/B ('EDP') is the original conforming civil and structural engineer for the project. Pursuant to a contract dated 25 March 2013 the plaintiff appointed the defendant to prepare an alternative design plan.

CASE IN BRIEF

[2] It is an agreed fact the defendant prepared two alternative design plans, the June endorsement plan on 4 June 2013 ('B6') and the October endorsement plan on 9 October 2013 ('B7'). This is a claim for negligence whereby the plaintiff claims June endorsement plan was defective such that October endorsement plan had to be prepared and this is evident from the difference in piling load. The plaintiff relies on *res ipsa loquitur*. The defendant denies the claim and says there was no defect in June endorsement plan and the difference in piling load in October endorsement plan was due to a change from non-suspended lower ground floor to suspended and additional mezzanine floor and changes by way of higher load at facilities floors (swimming pool and landscape).

WITNESSES AND EXPERTS' TOR

[3] Witnesses for the plaintiff were Mr Choy Tai Seng ('PW1', business and technical consultant of the plaintiff and witness statement marked as WSP1) and Mr Lau Kok Long ('PW2', civil engineer who had taken over as alternative design engineer after the defendant discharged itself). Witnesses for the defendant were Mr Teng Seng Loong ('DW1', associate director and engineer in charge of project and witness statement marked as WSD1), Mr Tony Yap Meng Soon ('DW2', Head of Structural Department EDP) and Mr Chew Wai Keit ('DW3', project coordinator for the plaintiff).

[4] Parties had their expert witnesses who filed their opinion via affidavits and gave evidence respectively as PW3 (Ir Chong Chin Meow) and DW4 (Dr Kribanandan Gurusamy Naidu). The revised terms of reference ('TOR') of the experts is dated 16 February 2015 and amended by clarification with both counsels on 24 August 2015. As per para 9 of TOR as amended the issues that needs determination by the experts is:

9. If approval by EDP was not mandatory—

   (i) whether the change to the design of Tower 1, 2 and 3 by changing the nature of the basement of ground floor from a non-suspended floor to a suspended floor justifies the increase of piling load in the October Endorsement Plan?;

   (ii) whether the change to the design of Tower 1, 2 and 3 by adding an additional floor known as the mezzanine floor justifies the increase of piling load in the October Endorsement Plan?; and

   (iii) whether the increase of floor load at the facilities floor (which inter alia carries the swimming pool and landscape) justifies the increase of piling load in the October Endorsement Plan?

The statement of agreed facts of the experts is marked as 'E'.

EDP'S APPROVAL

Evidence

[5] The approval of EDP is in the context of whether the plaintiff required EDP's approval of June endorsement plan before commencing construction work. Refer also to para 8 of TOR. It is not disputed the plaintiff had commenced piling work in June 2013. It was PW1's own evidence the plaintiff has to obtain EDP's approval and Mr Bruce Lee the boss of EDP had given verbal approval (p 28 NOP 19 January 2015). He was referred to cl 19 of letter of award dated 27 May 2013 from Paragon to the plaintiff which states all drawing related to re-engineering must get approval and endorsement by EDP. October endorsement plan had the defendant's stamp for construction drawing whereas June endorsement plan did not have the stamp. To a question before the plaintiff can commence work there must be a construction drawing stamp to indicate it is ready for construction he replied 'technically yes'. PW2 was not aware if EDP had given the approval to the plaintiff on June endorsement plan before construction work started. He stated the defendant's stamp on construction drawing is required before construction work can commence.

[6] DW1 evidence-in-chief was that the plaintiff commenced piling work without obtaining approval from EDP on June endorsement plan and the plaintiff should always ensure it obtains approval of EDP before commencing any form of construction work. EDP should endorse the drawings before the plaintiff commences construction work. This is the norm in the construction industry. In cross-examination he stated his contract with the plaintiff included supervision work and when the plaintiff commenced work in June 2013 they didn't supervise the work. Paragon objected to the work and he referred to a letter in B2 108 dated 28 October 2013 which he agreed was after October endorsement plan. There were objections from Paragon from June–August 2013 but there is no record. He was referred to B1 79 (piling load test record) and stated the senior clerk of works of Paragon had signed and it's dated 16 July 2013. He disagreed there was no objection from Paragon for the plaintiff to start work. In re examination he stated they were not present to supervise as they had not been informed by the plaintiff and didn't know they had started work. DW2 stated EDP was 'made aware' the plaintiff had commenced work and had objected by writing letters. There was no approval from EDP for the plaintiff to commence work. He is not aware that Bruce Lee had approved for the plaintiff to proceed with the work. No stop work order was issued to the plaintiff. He knew Paragon's clerk of work had endorsed the work. He did not tell Paragon not to sign and would not know if Paragon had agreed for the plaintiff to continue with the work. There is no letter from Paragon to the plaintiff to stop work. DW3 also stated EDP had not given its approval to the

plaintiff to start work. He was at site working for the plaintiff and Paragon did not stop them from working. He then said one Puan Sanipah the project manager of Paragon went to the site around June when piling had commenced and said there isn't any approval from EDP and they shouldn't start piling at that time.

Finding

[7] Clause 19 of the plaintiff's contract with Paragon requires it to obtain EDP's approval and endorsement on all drawings related to re engineering which would include the construction drawings. Although this is between the plaintiff and Paragon this would necessarily mean for all drawings submitted by the defendant to the plaintiff, the plaintiff would have to obtain the necessary approval from EDP. PW1 had stated there was no construction stamp on June endorsement plan which effectively meant it could not have commence work. At best what the plaintiff had was verbal approval from EDP's boss to proceed. The defendant's evidence including that from EDP was there was no approval. Although there was no written approval from EDP the evidence shows the plaintiff was allowed to proceed with work and there was no instruction from Paragon to stop nor objections in the form of letters. Paragon's senior clerk of work had also signed on the piling load test record in B1 79 dated 16 July 2013. Hence by conduct the plaintiff was allowed to proceed with the work and the absence of EDP's written approval does not render it premature to determine if June endorsement plan was defective.

WHETHER JUNE ENDORSEMENT PLAN DEFECTIVE

[8] The plaintiff states June endorsement plan was defective as evident from October endorsement plan whereby there was a difference in piling load and relies on *res ipsa loquitur*. It had to take remedial measures such as compensation piling, additional piling and earthwork. The particulars of defects as pleaded in para 15 of statement of claim are that the defendant had prepared a piling and pilecap design with inadequate load factor by less than up to 250% (*sebanyak kekurangan sehingga* 250%) and the inadequate load factor affected 80% of the pilecaps.

[9] In its defence to the allegation of defective design the defendant in para 17:

> 17 ... adopts and repeats paragraphs 12 to 14 and 16 above and further pleads that the defendant at the material time prepared its design drawing by taking into account sufficient loading. However as a result of the the plaintiff's instructions the defendant amended the said drawings which was subsequently rejected by EDP ...

[10] Paragraph 12 states the submission drawings were done in accordance with the information and approval by the plaintiff and para 13 that there were changes in the drawings where an additional floor was included plus changes made by EDP resulting in June endorsement plan becoming redundant and the defendant having to revise its drawings taking into account all material factors and changes. Paragraph 14 then states:

> 14 ... The compensation piles were required due to an additional floor being created by the architect namely the mezzanine floor. Further the defendant had initially prepared its design drawing based on the fact that it was a suspended lower ground floor. However subsequently based on the the plaintiff's instructions the defendant had to revise its drawings to non-suspended lower ground floor which was thereafter rejected by EDP ...

[11] Paragraph 16 essentially states the design conforms to the plaintiff's instructions, the terms of its employment and all relevant codes and standards of practice; prepared in accordance with the characteristics of the building at the material time before the changes; and the defendant had exercised all reasonable skill, care and diligence in the discharge of its professional duties.

[12] The defence is that the increase in load factor was due to change in basement ground floor from non-suspended to suspended; additional mezzanine floor and increase of floor load at the facilities floor (which, inter alia, carries the swimming pool and landscape). In addition the defendant had pleaded it had initially prepared on the basis of suspended which was subsequently revised to non-suspended and then back to suspended.

[13] The primary issue is whether the percentage of piling load attributed to the changes from non-suspended to suspended, additional mezzanine floor and increase of floor load at the facilities floor amounts to negligence on the part of the defendant.

[14] It is not disputed the project has three Towers in which Tower 1 and Tower 2 has 21 storeys and Tower 3 18 storeys. In between the Towers is a podium. The additional mezzanine floor affects only Tower 1 and Tower 2. The change from suspended to non-suspended affects all Towers. The swimming pool and the facility floor are located at the podium.

[15] It is further not disputed the change for a higher load at facilities floor came about at a meeting on 12 July 2013 with EDP (email dated 15 July 2013 in B 57) and the additional mezzanine floor by architectural drawings around 17 July 2013 (email of same date in B 58).

[16] The increase in load can be seen in the compensation piling plan (B3 254) where the piling points are within grid lines as for example A2 and the numbers 42/93 represent the drawings, 42 for June and 93 for October.

[17] As explained by PW1 suspended floor means the loads go into the column and pilecap and not into the ground whereas for a non-suspended floor the loads go directly into the ground. According to DW1 when a floor is supported by beams and columns it is a suspended floor and a floor directly supported by the soil is non-suspended.

Design of basement floor

[18] PW1 had given evidence his instructions to the defendant were for basement floor to be non-suspended. DW1's evidence was they had initially prepared on the basis of suspended floor and subsequently based on instructions from the plaintiff the design was revised to non-suspended. In cross examination he stated the decision to change to non-suspended was in early May. To a question 'as early as 15 May 2013 he knew the suspended floor is going to be changed to non-suspended and yet he did not include this amendment to the June endorsement plan' he answered 'I did not include the suspended floor load into June endorsement plan' (p 90 NOP 19 January 2015). In re-examination he was asked if the design on suspended floor was based on anyone's instruction he said it's the norm in engineering practice to design as suspended and subsequently the plaintiff asked them to change to non-suspended. The June endorsement plan was done on non-suspended because of the plaintiff's instructions (pp 115–116 NOP 19 January 2015). DW3 who was working with the plaintiff at the material time stated the basement floor was initially designed as suspended and the instruction from the plaintiff to design as non-suspended came around May 2013 (p 42 NOP 20 January 2015).

[19] It is the court's finding the evidence of the defendant that they had prepared the initial basement floor as suspended and then to non-suspended is probable as the column loading for it is evident from B2 26–28 and B2 33–35 sent to the plaintiff by email dated 9 May 2013 and 15 May 2013 respectively as stated by DW1. PW1 had confirmed receipt and that the column load in B2 26 is higher than in B2 33 (p 43 NOP 19 January 2015). PW1 also agreed the piling load as on 9 May 2013 was much higher when compared with June endorsement plan but disagreed he insisted the loading be reduced as he wanted the design to be non-suspended. It was DW3 evidence the column loading in B 33 is lower than that in B 26 and it was reduced because the plaintiff wanted it to be non-suspended and for a one tonne per square feet load to be implemented (p 45 NOP 20 January 2015). DW1's evidence is consistent

in that the defendant had initially designed a suspended floor which was then changed to non-suspended on the plaintiff's instructions and this was the premise for June endorsement plan.

Whether increase justified

Evidence of PW2

[20] PW2 came into the project after completion of piling. He has seen October endorsement plan but not June endorsement plan. He is not aware that the basement floor was designed as non-suspended and then changed to suspended nor is he aware of the design parameters at the time of June endorsement plan (pp 72 and 74 NOP 19 January 2015).

[21] He was referred to the compensation piling plan and said it was not possible for an additional two floors to contribute to a 121% load. There would be an increase in load for an additional mezzanine floor and that an increase of one floor would result in 5% load and the change from non-suspended to suspended floor would result in a 5% load (pp 75–76 NOP 19 January 2015). He agreed by increasing the design dead load and live load at the facilities floor there will be an increase in the piling load (p 73 NOP 19 January 2015).

Evidence of DW2

[22] DW2 from EDP stated June endorsement plan was not defective as for the first set of submission drawings the design parameters had not been agreed on, for this set of drawings too the loads that came out were very light and the defendant was told of this and the loads would become heavier as the defendant was asked to increase the load and the change in load was due to the change of design concept (pp 13–14 NOP 20 Janaury 2015). He was asked to explain B 57 item 5 'to allow higher floor load at facilities floor probably 15–20kN/m2. Generally floor load of 12–13 shall be allowed' and he said the design was still a bit fluid and because landscape tends to be heavy, facilities floor tend to be heavy because they put a lot of things on it heavier load for this level should be considered (p 12 NOP 20 January 2015). On PW2 evidence that an increase of one floor would result in a 5% increase in load he said this is not how the design is done and the whole thing has to be modeled into computer software which then gives column loads for every column point; certain columns may increase a lot and certain column columns may not increase that much and it thus depends on the layout and if a water tank or TNB substation is included these loads may be 20 times the normal floor load. He concluded that to say increase by 5% for every floor increase is a very general statement (p 16 NOP 20 January 2015). In cross-examination of the facilities floor he said the floor load of 12–13 is the dead load and 15–20 is the additional live load and the

design will have a swimming pool and landscape but how big or how small was not known yet (pp 27 and 31 NOP 20 January 2015). As to the percentage of increase of 121% as opposed to 5% he attributed it to structural analysis and change of design loads and design parameters (pp 35–36 NOP 20 January 2015).

Evidence of PW3

[23] The report of the plaintiff's expert ('PW3') in CCM-3 is as follows:

> Item No 9(i): Change of basement floor or ground floor from a non-suspended floor to a suspended floor, should justify 1 floor maximum 5% increase in load;
>
> Item No 9(ii): Addition of two more floor in Tower 1 and 2 will increase the load by approximately 10%, for each Tower;
>
> Item No 9(iii): There was no change in the architectural plans at the swimming pool and landscape area which justifies no increase in loading.
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> For 20 stories building local area method is practised by 99% of engineers.
>
> Only for 30 stories and higher building will 3d models like ETABS be used and even then 25% difference from load area method.

[24] In cross-examination he stated he had not carried out any structural analysis on the building before preparing his report. He disagreed when a basement floor is designed to withstand mechanical services like water tank and water pump the percentage of load is more than 5% as 'you don't put a very big water tank at the basement'. When the change was to a podium of four floors the increase would still not be more than 5% as his reference to load is to the whole building and 'when we design we never design four floors separately, we designed the whole building which is 21 storey'. For item No 9(i) he did the calculations but it's not in the report and it is a matter of dividing by 21 storeys to get the 5%. He disagreed it's based on assumptions and speculations. On item 9(ii) he said it's based on the total of 21 storeys where by adding one floor is 5% and another floor is 5% and is simple arithmetics. He disagreed item No 9(i) and (ii) were based on assumptions and speculations. With regard to the facilities area he said there were no changes as the live load was still 1.5 kilo newton psm. There was no change to the architecture plans. He said B 57 item No 5 was not an instruction to increase load but a caution. He disagreed to the suggestion if this was an instruction from EDP there would be some increase in load. He stated local area method used computer software to calculate loading. He disagreed ETABs would be a more accurate basis for column load calculation. He confirmed DW4 had stated the column increase for Tower 1 and 2 is 33% and for Tower 3 is 15% but does not agree with his method. He agreed if a load is increased in a particular location the piling points have to be increased for symmetry but there is no norm as to the percentage of increase.

He was involved in this project and was appointed by the plaintiff. He disagreed as he was connected to the plaintiff in the same project he is not independent. In re examination his calculation of adding one floor to 21 floor is a normal calculation and not against engineering practice. Not everyone in engineering uses ETABs and local area method is an accurate way of calculating load. When he said there was no instruction to increase live load it could be someone had overlooked as the load for swimming pool and recreation area is already in the code of practice and 1.5 kilo newton psm is standard. The increase is not based on overall as the increase of mezzanine is only half of Tower 1 and 2 and the pile increase is at that area and the rest of the area is not affected. He was asked when piles are added for symmetry whether there is a practice for how much to add and the limit to add he stated the engineer has the prerogative to put in the design and he can add one, two, three or four. The engineer will consider the adequacy of loading and stability.

Evidence of DW4

[25] Appendix I to DW4's opinion shows the column loads compared to total pile capacity as between June endorsement plan and October endorsement plan. Pages 133–134 is in respect of Tower 1 and shows the column load for June to be 255,950 and October 339,243. Pages 136–140 is in respect of Tower 3 and shows the column load for June to be 532,280 and October 612,509. In para 5 of his opinion DW4 states as follows:

> 5.5 It can be confirmed that the changes to the design of Tower 1, 2 and 3 by changing the nature of the basement floor or ground floor from a suspended floor to a non-suspended floor justifies the increase of piling load in the October Endorsement Plan.

(Note: it should read as from non-suspended to suspended).

> 5.6 The changes to the design of Tower 1 and 2 by adding an additional floor known as mezzanine floor justifies the increase to the load in the October Endorsement Plan ...
>
> 5.7 The increase of floor load at the facilities floor (which inter alia carries the swimming pool and landscape) only marginally increases the load in the October Endorsement Plan.
>
> 5.8 The overall increase in column loads due to design changes are over 33% for Towers 1 and 2 and 15% for Tower 3 when compared the provisions in June endorsed drawings. If the the plaintiff had taken the original advice from the defendant for column loads based on the full ETABs model in June 2013 the subsequent increases in piling provision due to design changes would have been more manageable.

[26] DW4 also stated his analysis was undertaken using the software ETABs 2015 ('Extended Three Dimensional Analysis of Building System') and this software provides the profession with the most efficient and comprehensive way to analyse and design high rise buildings (mainly analysis) (paras 3.2.1 and 3.2.2).

[27] In cross-examination it was put to DW4 he was only to have addressed the three issues in TOR and yet he came up with a finding of fact in para 5.8 that the defendant had advised the plaintiff and this was overlooked by the plaintiff and as such his report was flawed to which DW4 disagreed as he had to understand the basis on why June endorsement plan had been made. He agreed June endorsement plan had been endorsed by the defendant but he was not sure in what context it had been endorsed. He also agreed when the defendant endorsed it they stood by the load calculations appearing in the plan. According to DW4 as per Appendix I the first column is based on ETABs, second coulumn on June endorsement plan and sixth column on October endorsement plan, both based on ETABs. As a result of the changes made the increase in load is as seen in column 11 and for gridline1/A the change is 103.81%. The comparison between column one and six shows a change of 5.68%. He explained that column one is generated from live loads and in column two there was a blanket requirement and one ton newton psm load on the flooring was used to obtain the column load. He said the difference in load between June and October endorsement plan was not unusual as June endorsement plan was based on a modification of loading requirements. The increase was justified based on the original design of a load of one ton psm. On the live load of 1.5kN for the facilities area as stated by PW3 he was asked if he agreed that is standard applicable he said this is based on the type of area as toilets and corridors will have a different loading. On whether the overall 33% meant the load is average of over all the piling points in the floor of building he said 'no'. He explained the structure has a foot print and there are column positions for 100 as an example and the loads from the floors are transferred back to the columns and the foundation for that 100 areas. The 33% increase may only affect one particular area and may even be 200% or 150% and in another area where there was no change the increase may be 1% or 2%. The load shifting takes place everywhere and 33% is every point of the 100 points before the change and if after the change the load load is 3300 kN before and 50,000 after it takes the difference and gives a value. It doesn't indicate where the increase is or if that point has 200% or 1% increase; it essentially adds up the 100 points in a spreadsheet as was done here and gives a figure. This is compared to a figure in the original model and the percentage is then obtained. He disagreed that by looking at column two and six the increase was not justified by design change. He disagreed to the suggestion that column one and six which showed an increase of 5.68% disproves his answer as he had to go back to the basis on which the original design was done.

[28] In re-examination he stated he disagreed the design change did not justify the load increase as columns two, six and 11 shows the increase based on the addition of mezzanine floor and the change from non-suspended to suspended and also because the loading criteria of one ton psm in June endorsement plan had changed. As to his coming up with finding of facts he said this was in the context of understanding what was done by the defendant at the time of construction which showed what was done in June and how the drawing was produced and only with that could he do the comparison with October. He was not extracting any position of fact but trying to get the facts to support his calculation.

Evaluation of evidence

[29] The evidence of PW3 is that the change from non-suspended floor to suspended would justify a 5% increase in load, addition of two or more floors in Tower 1 and 2 will increase the load by 10% for each Tower and there was no change to the plans for facilities such that no increase in loading was justified. This differs from that of DW4 who stated the increase of 33% for Tower 1 and 2 and 15% for Tower 3 is justified by the design changes made and the increased load at the facilities load only marginally increased the load in October endorsement plan.

[30] In *Batu Kemas Industri Sdn Bhd v Kerajaan Malaysia Tenaga Nasional Bhd* [2015] 5 MLJ 52 the Court of Appeal in its judgment dated 2 July 2015 reiterated that when expert opinions are in conflict with one another the court is obliged to assess the evidence and accept if necessary the most reliable parts in forming its decision. In *Singapore Finance Ltd v Lim Kah Ngam (S' Pore) Pte Ltd & Eugene HL Chan Associates (Third Party)* [1984] 2 MLJ 202 the approach in evaluating conflicting experts' evidence is to examine the scientific grounds and bases on which they rely.

[31] As between PW3 and DW4's expert opinion I prefer the evidence of DW4 as his report was prepared and analysed in a scientific manner and thus more reliable and credible. The report entailed an analysis using ETABs which in DW4's words is 'the most efficient and comprehensive way to analyse and design high rise buildings' and was based on actual loading data the result of which is seen in Appendix I. In contrast PW3 stated he had not done any structural analysis and his method was by simple arithmetics and the 5% increase was by dividing by 21 storeys and 10% was a matter of adding 5% for one floor and another 5% for another floor. Although he stated his method of calculation is a normal method and not against engineering practice and that not everyone uses ETABs there is no reason why a more comprehensive and accurate method should not be preferred. With regard to PW3's evidence there was no change to the plans on facilities floor thereby not warranting any

increase in load and the live load was still 1.5 kilo newton psm as it was the standard the evidence of DW2 on the email in question in B 57 is very clear in that 'to allow higher floor load at facilities floor probably 15–20kN/m2. Generally floor load of 12–13 shall be allowed' showed the design was still a bit fluid and therefore according to DW2 'landscape tends to be heavy, facilities floor tend to be heavy because they put a lot of things on it heavier load for this level should be considered'. There was therefore an increase in load at the facilities floor. Accordingly DW4's evidence the increase of floor load had increased the load in October endorsement plan although marginally is accepted.

[32] The evidence of PW2 was the same as that of PW3. As admitted by PW2 himself he had not seen June endorsement plan and was not aware as to whether the basement floor was designed as non-suspended and later changed to suspended. He was unaware of the design parameters and comments by EDP. Further in view of the court's finding it prefers the evidence of DW4, PW2's evidence on what the load increase ought to be cannot support the plaintiff's case.

[33] In the same vein DW2's evidence supplements that of DW4 when he essentially stated if one floor is added it does not necessarily increase the load by 5% as this is not how the design is done and the whole thing has to be modeled into computer software which then gives column loads for every column point and that an increase by 5% for every floor increase is a very general statement.

[34] The plaintiff counsel submitted DW4's opinion that the load in October endorsement plan varied significantly as the load calculation for June endorsement plan was much lower due to the defendant forcing the plaintiff to reduce load in June endorsement plan should be disregarded. This is because it is not in the defence that the change was due to reduction of load factor nor in TOR. It was pleaded in para 14 of defence that 'subsequently based on the the plaintiff's instructions the defendant had to revise its drawings to non-suspended lower ground floor' and in para 17 that 'the defendant had initially prepared its design drawing based on the fact that it was a suspended lower ground floor'. The defendant had thus pleaded and led evidence which the court accepted that the design was first prepared on the basis of suspended floor and changed to non-suspended in June endorsement plan and there was a reduction in load and loading was calculated on one tonne per square feet load. Although reduction of load factor is not in TOR this does not detract from the essence of DW4's evidence in para 5.8 read with para 5.5–5.6 the overall increase in column loads due to design changes are over 33% for Towers 1 and 2 and 15% for Tower 3 when compared to the provisions in June endorsed drawings. This would be the reference to column 2 which is June endorsement plan, column 6 which is October endorsement plan and column

11 which is the % increase between the two plans. The second part of para 5.8 that 'If the the plaintiff had taken the original advice from the defendant for column loads based on the full ETABs model in June 2013 the subsequent increases in piling provision due to design changes would have been more manageable' is with reference to column 1 which is what the defendant had originally prepared as suspended, column 6 and column 10 which is the % difference between the original design and October endorsement plan. The court is only concerned with the percentage increase between the June and October endorsement plan for which the court has accepted DW4's evidence an increase of 33% and 15% is justified. As to DW4 having come to a finding of fact he had explained he had looked into the original design with a view to understanding the basis of June endorsement plan.

[35] In *PB Malaysia Sdn Bhd v Samudra (M) Sdn Bhd* [2009] 7 MLJ 681 the principles distilled from that case regarding the standard of care of consulting engineers is that 'the standard expected of consulting engineers in designing and giving advice is only that of reasonable care and skill. A designer does not guarantee that a design will work or that it be fit for its intended purpose' (p 690); 'the standard of reasonable care and skill is not a standard of perfection. It is not sufficient to show an error in order to establish a failure to exercise reasonable care and skill. Actual negligence must be shown' (p 691) and 'A design that is faulty or wrong does not necessarily imply negligence. … not every error or wrong advice is negligence' (p 692). In our instant case the evidence shows the defendant had prepared June endorsement plan based on the design parameters of non-suspended floor and no mezzanine floor. As a result of changes made which are not denied there was an increase in piling load for which the court has accepted the increase to be justified.

[36] Under the circumstances *res ipsa loquitur* does not apply. In *Matang Plastik & Metal Work Industries Sdn Bhd & Ors v Daimler Chrysler (M) Sdn Bhd & Ors* [2014] 6 MLJ 244 the Court of Appeal at p 251 had referred to *Clerk & Lindsell on Torts* (18th Ed) to say that it is a label which represents a rule of evidence and states no principle of law and it applies to a set of circumstances in which a claimant proves a case so as to call for a rebuttal from the defendant, without having to allege and prove any specific act or omission on the part of the defendant and he merely proves a result. There was also a reference to *Scot v London and St Katherine Docks* [1865] 3 H&C 596 where *res ipsa loquitur* can only apply where there is no evidence as to why or how the occurrence took place. In our instant case evidence has been led and accepted the defendant was not negligent in preparing June endorsement plan.

[37] On a balance of probability the plaintiff has not proved June endorsement plan was defective thereby necessitating October endorsement plan.

DELAY

[38] It is not disputed pursuant to the letter of proposal from the defendant (B 11–13) the defendant was to complete its piling plan by April 2013 and it was only completed on 3 June 2013 which is June endorsement plan. It is the court's finding there was no delay by the defendant as the defendant having received the initial architectural plans and the structural layout plans by EDP on 21 March 2013 issued to the plaintiff the new grid system, column position and transfer floor framing design/plan by 29 March 2012 (B 41 and 44) and floor plan and pilecap details on 19 April 2013 and 3 May 2013 (B 45–46). The plaintiff only reverted with the revised architectural drawings via email on 7 May 2013 as per B 49. This therefore explains why the plans were only ready on 4 June 2013 and the delay is not attributable to the defendant.

COUNTERCLAIM

[39] The counterclaim is for RM63,000 being the professional fees due and owing to the defendant for services rendered. In para 19 of P's reply it states it did not pay the defendant the amount as the defendant had been negligent in its duties causing the plaintiff to incur losses and the plaintiff was entitled to set off this amount against the losses. Hence although it was agreed the trial proceeds on the issue of liability with damages to be subsequently assessed this would have been appropriate where the plaintiff had succeeded in its case. As the plaintiff did not dispute the amount due or the work done by the defendant but that the defendant had been negligent and the plaintiff could set off the amount it follows the defendant has proved it is entitled to the counterclaim.

CONCLUSION

[40] The plaintiff's claim is dismissed and the defendant's counterclaim is allowed with costs.

The plaintiff's claim dismissed; the defendant's counterclaim allowed with costs.

Reported by Afiq Mohamad